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मानक

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Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 11684 (1986): Test chart for spinning and planishing lathes [PGD 4: Metal Forming Machines]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

TEST CHART FOR SPINNING AND PLANISHING LATHES

1. Scope — Describes geometrical tests on spinning and planishing lathes and corresponding permissible deviations.

1.1 It deals only with the verification of accuracy and applies neither to the testing of the running of the machine (vibrations, abnormal noises, stick-slip motion of components, etc) nor to the machine characteristics (speeds, feeds, etc) which shall generally be checked before testing the accuracy.

2. Preliminary Remarks

2.1 To apply these tests, reference shall be made to IS : 2063-1962 'Code for testing machine tools' especially for installation of the machine before testing, warming up of spindles and other moving parts, description of measuring methods and recommended accuracy of testing equipment.

2.2 The sequence in which the geometrical tests are given is related to the sub-assemblies of the machine and does not define the practical order of testing. In order to make checking or mounting of instruments easier, tests may be carried out in any convenient sequence.

2.3 When inspecting a machine, it is necessary to carry out all the tests described in the standard except those tests which may be omitted in mutual agreement between the buyer and the manufacturer.

2.4 Whenever alternate methods of testing are suggested, the choice of actual method of testing is left to the manufacturer.

2.5 For the purpose of this standard, various methods of expressing permissible deviations are employed, each having a particular type of application. The methods employed are as follows:

C00/000 for deviations of perpendicularity which are ratios.

000 for any length of C00 for deviations of straightness and parallelism; this expression is used in fact for local permissible deviations, the measuring length being obligatory,

000 for 000 for deviations of straightness and parallelism; this expression is used to recommend a measuring length but in this case the proportionality rule comes into operation if the measuring length differs from those indicated.

3. Testing Instruments — The testing instruments shall be of the approved type and shall be calibrated at a recognized temperature conforming to the relevant Indian Standard.

4. Accuracy Requirements — The tests to be carried out, the instruments required, the maximum permissible deviations and the manner of carrying out the tests shall be as detailed in the test chart.

EXPLANATORY NOTE

For spinning and planishing lathes, it is sufficient for trueness and surface trueness at the work spindle and the tailstock centre sleeve together with the alignment of both axis to be tested. With regard to the wide range of applications of these machines, a practical test has not been included.

This standard is based on DIN 55803-1979 'Machine tools — Spinning and planishing lathes — Acceptance condition', issued by the Deutsches Institut für Normung (DIN).

Adopted 2 June 1986

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TEST CHART FOR SPINNING AND PLANISHING LATHES

TYPE.....

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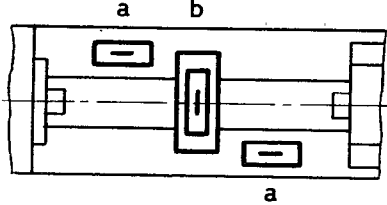
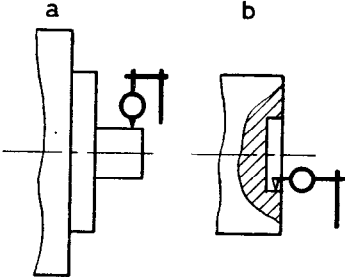
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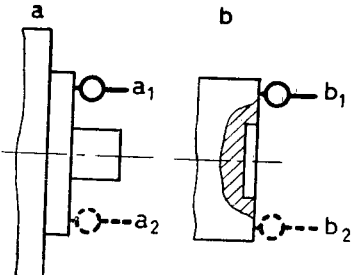
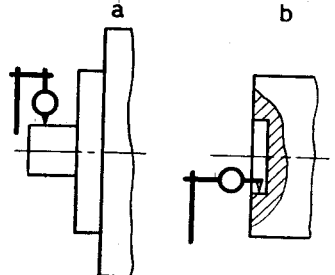
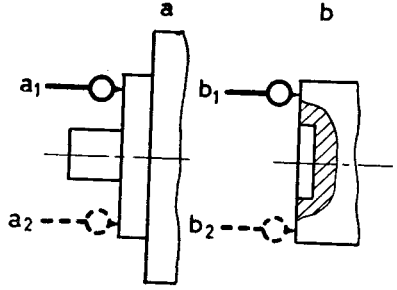
MACHINE NO.

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INSPECTOR.....

All dimensions in millimetres.

SI No.	Figure	Object	Measuring Instruments	Instruction for Testing	Permissible Deviation	Actual Error
(1)	(2)	(3)	(4)	(5)	(6)	(7)
I — PRELIMINARY CHECKS						
		Adjustment of machine: a) in longitudinal direction, and b) in transverse direction	Precision level, measuring bridge, test blocks and other test aids	The tests are to be carried out at different points on the slideways or the sighting surfaces. Precision level placed on the slideways or the sighting surface and take the reading	For a gauge length of 100: a) 0.04 b) 0.04	
II — GEOMETRICAL TESTS						
1.		Trueness of centering on the work-spindle: a) outside, and b) inside	Measuring column and precision dial gauge	Measuring column secured with the precision dial gauge to a fixed part of the machine. Position the gauge pin of the precision dial gauge at a right angle to the outer surface of centerings at the work-spindle, at a on the outside or at b on the inside diameter. Rotate the spindle and take the readings	For (a) and (b) workpiece swing diameter: 0.02 up to 800 0.04 over 800 up to 2 000 0.06 over 2 000	

2.		<p>Surface trueness of contact surfaces of the work spindle:</p> <p>a) at outer centering, and b) at inner centering</p>	<p>Measuring column and precision dial gauge</p>	<p>Measuring column secured with the precision dial gauge to a fixed part of the machine</p> <p>Position the gauge pin of the precision dial gauge at the maximum possible diameter at a_1 on the contact surfaces of the work spindle. Rotate the spindle to a_2 and take the reading in the changed position</p> <p>Repeat the test in the same way at b</p>	<p>For (a) and (b) contact surface diameter:</p> <p>0.03 up to 300 0.06 over 300</p>	
3.		<p>Trueness of centerings of the centre sleeve:</p> <p>a) at outer, and b) at inner</p>	<p>Measuring column and precision dial gauge</p>	<p>Measuring column secured with the precision dial gauge to a fixed part of the machine. Position the gauge pin at a right angle to the outer surface of the centering at a. Rotate the spindle and take the reading</p> <p>Conduct the test on the inner diameter of the centering at b in the method mentioned above</p>	<p>For (a) and (b) workpiece swing diameter:</p> <p>0.02 up to 800 0.03 over 800 up to 2 000 0.04 over 2 000</p>	
4.		<p>Surface trueness of contact surfaces of the centre sleeve:</p> <p>a) at outer centering, and b) at inner centering</p>	<p>Measuring column and precision dial gauge</p>	<p>Measuring column secured with the precision dial gauge to a fixed part of the machine. Position the gauge pin of the precision dial gauge at the maximum possible diameter at a_1 of the contact surfaces of the centre sleeve. Rotate the spindle a_2 and take the reading in the changed position</p> <p>Repeat the test in the same way at b</p>	<p>For (a) and (b) contact surface diameter:</p> <p>0.02 upto 800 0.08 over 800 up to 2 000 0.04 over 2 000</p>	

(Continued)

TEST CHART FOR SPINNING AND PLANISHING LATHES — Contd

IS : 11684 - 1986

SI No.	Figure	Object	Measuring Instruments	Instruction for Testing	Permissible Deviation	Actual Error
(1)	(2)	(3)	(4)	(5)	(6)	(7)
5.		<p>Alignment of axes of the work-spindle and the centre sleeve:</p> <p>a) in vertical plane, and</p> <p>b) in horizontal plane</p> <p>Position I: Centre sleeve engaged</p> <p>Position II: Centre sleeve retracted</p>	<p>Test mandrel, travel arm and precision dial gauge</p>	<p>Test mandrel secured with travel are in the mounting of the workspindle</p> <p>Place the gauge pin of the dial gauge at the engaged centre sleeve in the vertical plane at a_1 (I) and take the reading</p> <p>Rotate the travel arm through 180° to a_3, and take the reading. Calculate the mean value</p> <p>Repeat the test in the horizontal plane at b_1 and b_2</p> <p>Then retract the centre sleeve (II) and at a distance of 300, repeat the test in both vertical and horizontal planes</p>	<p>For workpiece swing diameter</p> <p>Up to 800:</p> <p>I $a = 0.05$ $b = 0.04$</p> <p>II $a = 0.1$ $b = 0.08$</p> <p>Over 800 up to 2 000:</p> <p>I $a = 0.1$ $b = 0.05$</p> <p>II $a = 0.2$ $b = 0.15$</p> <p>Over 2 000:</p> <p>I $a = 0.2$ $b = 0.1$</p> <p>II $a = 0.3$ $b = 0.2$</p> <p>Note — Centre sleeve pointing to the work spindle.</p>	
6.		<p>Parallelism of axes of the work-spindle and the centre sleeve to the movement of longitudinal slide in the vertical plane</p>	<p>Measuring column, precision dial gauge and test mandrel</p>	<p>Test mandrel secured in the work-spindle mounting and the centre sleeve</p> <p>Place gauge pin of dial gauge against the mandrel. Move the longitudinal slide by the gauge length and take the reading</p>	<p>0.2 on a gauge length of 300</p>	